

## CLAIMS

1. A process for preparing a modified metallosilicate catalyst composite comprising of a mixture of amorphous silica, alumina and a pore size controlled metallosilicate useful for alkylaromatic conversion, the said process comprising
  - a) contacting an intermediate pore metallosilicate with an organosilicon compound in a solvent for a specific duration and then recovering the solvent
  - b) combining the organosilicon compound treated metallosilicate with water and then drying the catalyst
  - c) repeating the steps a) and b) above
  - d) calcining the catalyst in an oxygen containing atmosphere sufficient to remove the organic material and deposit siliceous matter on the metallosilicate.
2. A process as claimed in claim 1 wherein said organosilicon compound is water insoluble.
3. A process as claimed in claim 2 wherein the said organosilicon compound is tetraalkoxy silane.
4. A process as claimed in claim 3 wherein the said tetraalkoxy silane is tetraethoxy silane.
5. A process as claimed in claim 1 wherein the said solvent is selected from lower aliphatic alcohols, C<sub>5</sub>-C<sub>10</sub> saturated linear or cyclic hydrocarbons, C<sub>6</sub>-C<sub>8</sub> aromatics or mixture thereof.
6. A process as claimed in claim 5 wherein the said solvent is a mixture of toluene and methanol.
7. A process as claimed in claim 1 wherein the concentration of the organosilicon compound in said solvent is in the range of 1 to 25 percent by weight.
8. A process as claimed in claim 1 wherein the said metallosilicate is treated with the organosilicon compound containing solution for 0.5 to 24 hours.
9. A process as claimed in claim 1 wherein the said solvent is recovered after metallosilicate is treated with the organosilicon compound containing solution.
10. A process as claimed in claim 1 wherein amount of said water is in the range of from 1 to 200 percent, preferably 2 to 100%, more preferably, 5 to 90% of the mass of the metallosilicate.
11. A process as claimed in claim 1 wherein the said water combined metallosilicate composite is dried at a temperature of from 10 to 150 °C,

12. A process as claimed in claim 11 wherein the said water combined metallosilicate composite is dried at a temperature of 50 to 150°C.
13. A process as claimed in claim 11 wherein the said water combined metallosilicate composite is dried at a temperature of from 80 to 130°C.
14. A process as claimed in any of the claims 11 wherein the said wet metallosilicate composite is dried for from 1 to 20 hours.
15. A process as claimed in claim 1 wherein the step a) and step b) are repeated more than once.
16. A process as claimed in claim 1 wherein the solvent recovered is reused.
17. A process as claimed claim 1 wherein the said calcination is carried out at a temperature in the range of from 160 to 800°C.
18. A process as claimed claim 17 wherein the said calcination is carried out at a temperature in the range of from 300 to 600 °C.
19. A process as claimed claim 17 wherein the said calcination is carried out at a temperature in the range of from 400 to 550°C.
20. A modified metallosilicate catalyst composite comprising of a mixture of amorphous silica, alumina and a pore size controlled metallosilicate, useful for alkylaromatic conversion prepared by the process of claim 1.
21. A process for preparing a modified metallosilicate catalyst composite comprising of a mixture of amorphous silica, alumina and a pore size controlled metallosilicate useful for alkylaromatic conversion, the said process comprising
  - a) contacting an intermediate pore metallosilicate with a water insoluble organosilicon compound in a solvent and then recovering the solvent
  - b) combining the organosilicon compound treated metallosilicate with water, the amount of water employed being in the range of from 1 to 200 percent of the mass of said metallosilicate,
  - c) drying the product from step b) at a temperature in the range of 10 to 150°C;
  - d) repeating the steps a) and b) above
  - e) calcining the product in an oxygen containing atmosphere at a temperature in the range of 160 to 800°C sufficient to remove the organic material and deposit siliceous matter on the metallosilicate.

22. A process for preparing a catalyst composite comprising of a mixture of amorphous silica, alumina and a pore size controlled metallosilicate useful for alkylaromatic conversion, said process comprising
- a) contacting an intermediate pore metallosilicate with an organosilicon compound in a solvent for a specific duration and then recovering the solvent
  - b) drying the catalyst
  - c) repeating the steps a) and b) above
  - d) calcining the catalyst in an oxygen containing atmosphere sufficient to remove the organic material and deposit siliceous matter on the metallosilicate.
23. A process as claimed in claim 22, wherein said organosilicon compound used is water soluble.
24. A process as claimed in claim 22 wherein the said organosilicon compound is aminoalkyltrialkoxo silane.
25. A process as claimed in claim 24 wherein the said aminoalkyltrialkoxo silane is 3-aminopropyl triethoxysilane.
26. A process as claimed in claim 22 wherein the said solvent is selected from lower aliphatic alcohols, C<sub>5</sub>-C<sub>10</sub> saturated linear or cyclic hydrocarbons, C<sub>6</sub>-C<sub>8</sub> aromatics or mixture thereof and water.
27. A process as claimed in claim 22 wherein the said solvent is water.
28. A process as claimed in claim 22 wherein the concentration of the organosilicon compound in said solvent is in the range of 1 to 99%, preferably, 2 to 50%, more preferably 5 to 25% by weight.
29. A process as claimed in claim 22 wherein the said metallosilicate is treated with the organosilicon compound containing solution for 0.5 to 24 hours.
30. A process as claimed in claim 22 wherein the said solvent is recovered after metallosilicate is treated with the organosilicon compound containing solution.
31. A process as claimed claim 22 wherein the said organosilicon compound treated metallosilicate composite is dried at a temperature from 10 to 150 °C.
32. A process as claimed in claim 22 wherein said water treated metallosilicate composite is dried for at least 1 hour.
33. A process as claimed in claim 22 wherein the step a) and step b) are repeated at least once.

34. A process as claimed in claim 22 wherein the solvent recovered from the silanation step is reused for further silanation.
35. A process as claimed in claim 22 wherein the said calcination in said oxygen containing atmosphere is carried out at a temperature in the range 160 to 800 °C
36. A process as claimed in claim 22 wherein the said metallosilicate is selected from the group of pentasil family e.g. such as Ga-ZSM-5, Fe-ZSM-5, B-ZSM-5, Ga-Al-ZSM-5, Fe-Al-ZSM-5, B-Al-ZSM-5.
37. A process as claimed in claim 22 wherein the said metallosilicate is selected from the group of pentasil family e.g. such as Ga-ZSM-5, Fe-ZSM-5, B-ZSM-5, Ga-Al-ZSM-5, Fe-Al-ZSM-5, B-Al-ZSM-5.
38. A process as claimed in claim 36 wherein said metallosilicate is Ga-Al-ZSM-5 having silicon to aluminium ratio in the range of 150 to 600 and silicon to gallium ratio is in the range of 500 to 2000.
39. A process as claimed in claim 37 wherein said metallosilicate is Ga-Al-ZSM-5 having silicon to aluminium ratio in the range of 150 to 600 and silicon to gallium ratio is in the range of 500 to 2000.
40. A process for alkylaromatic hydrocarbon conversion comprising contacting the a mixture of hydrocarbons feed with a catalyst under the conditions effective to convert said hydrocarbon feed to a hydrocarbon product different from said hydrocarbon feed, wherein said catalyst is prepared by a process comprising
  - a) contacting an intermediate pore metallosilicate with an organosilicon compound in a solvent for a specific duration and then recovering the solvent
  - b) combining the organosilicon compound treated metallosilicate with water and then drying the catalyst
  - c) repeating the steps a) and b) above
  - d) calcining the catalyst in an oxygen containing atmosphere sufficient to remove the organic material and deposit siliceous matter on the metallosilicate.
41. A process for alkylaromatic hydrocarbon conversion comprising contacting the a mixture of hydrocarbons feed with a catalyst under the conditions effective to convert said hydrocarbon feed to a hydrocarbon product different from said hydrocarbon feed, the wherein said catalyst is prepared by the process comprising
  - a) contacting an intermediate pore metallosilicate with an organosilicon compound in a solvent for a specific duration and then recovering the solvent

- b) drying the catalyst
  - c) repeating the steps a) and b) above
  - d) calcining the catalyst in an oxygen containing atmosphere sufficient to remove the organic material and deposit siliceous matter on the metallosilicate.
42. A process as claimed in claim 40 wherein the hydrocarbon conversion is selective alkylaromatic alkylation of with an alkylating agent selected from the lower aliphatic alcohol or lower alkenes.
43. A process as claimed in claim 42, wherein the alkylaromatic compound is toluene.
44. A process as claimed in claim 40, wherein the alkylating agent is methanol.
45. A process as claimed in claim 40 wherein the product comprises of xylenes with very high selectivity for para-xylene and the said conversion is by alkylation.
46. A process as claimed in claim 40 wherein the hydrocarbon conversion is selective alkylaromatic alkylation of with an alkylating agent selected from the lower aliphatic alcohol or lower alkenes.
47. A process as claimed in claim 42, wherein the alkylaromatic is toluene.
48. A process as claimed in claim 40, wherein the alkylating agent is methanol.
49. A process as claimed in claim 40 wherein the product comprises of xylenes with very high selectivity for para-xylene and the said conversion is by alkylation
50. A process for preparing a modified metallosilicate catalyst composite comprising of a mixture of amorphous silica, alumina and a pore size controlled metallosilicate useful for alkylaromatic conversion, the said process comprising
- a) contacting an intermediate pore metallosilicate with a water soluble organosilicon compound in a solvent and then recovering the solvent
  - b) drying the product from step a) at a temperature in the range of 10 to 150°C;
  - c) repeating the steps a) and b) above
  - d) calcining the product in an oxygen containing atmosphere at a temperature in the range of 160 to 800°C sufficient to remove the organic material and deposit siliceous matter on the metallosilicate.